Ref 12
1 of 26

ecology and environment, inc.

CLOVERLEAF BUILDING 3 6405 METCALF OVERLAND PARK KANSAS 66202 TEL 913/432 9961

International Specialists in the Environment

Site Big River
ID# MOD 981126899
Break 1.8
Other
8-4-88

MEMORANDUM

TO Pete Culver, RPO

THRU John Caoile, FITOM

FROM Bob Overfelt, E & E/FIT

DATE August 4, 1988

SUBJECT Data Summary for the Limited Sampling of the Big River Mine Tailings Site located in Desloge, Missouri
TDD #F-07-8805-008 PAN #FM00616SA
Site #X75 Project #001
Superfund Contact: Gene Gunn

INTRODUCTION

The Ecology and Environment, Inc , Field Investigation Team (E & E/FIT) was assigned by the Region VII U S Environmental Protection Agency (EPA) to conduct a limited site investigation of the Big River Mine Tailings site in Desloge, Missouri This work was authorized under Technical Directive Document (TDD) #F-07-8711-039 The investigation included sampling of the mine tailings and the collection of background soil samples The purpose of the investigation was to obtain current data on the heavy metals content of the mine tailings

SITE BACKGROUND

The Big River Mine Tailings site is located in St Francois County approximately one-half mile west of Desloge, Missouri (Figure 1) The site covers approximately 600 acres and consist mainly of mine tailings that are up to 100 feet deep A sanitary landfill and landfill office are located on the southwest end of the site The landfill is operated by the St Francois County Environmental Corporation which has a state permit to fill approximately 60 acres The majority of the site is situated within a horseshoe shaped meander of the Big River

This 600-acre site is the result of 30 years (1929 to 1958) of stockpiling lead mining wastes or tailings by the St Joe Minerals Corporation The tailings are rich in lead (Pb), cadmium (Cd) and zinc (Zn) Because the mine tailings are easily airborne and are located

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on the Big River air releases and surface water releases are potential problems There is also the possibility of leachate from the on-site landfill releasing Pb and other heavy metals to the ground water and surface water

FIELD ACTIVITIES

The E & E/FIT conducted a limited site investigation on May 16, 1988 E & E/FIT members present were Bob Overfelt, team leader, Sharon Martin, site safety officer, and Ted Faile, team member EPA Emergency Preparedness and Response (EP&R) members present were Jeff Weatherford and Paul Doherty

Bryant AuBuchon, manager of St Francois County Landfill, granted access to the property when the E & E/FIT arrived on site Mine tailings samples were taken at various locations on the site in an attempt to characterize the heavy metals content in the tailings over the site area Additionally, a photograph was taken at each sample location Sample series TK981 was assigned to this sampling effort

SOIL SAMPLING

Twelve soil samples were collected three background samples and nine on-site samples Each sample consisted of five aliquots taken at 5-foot intervals All samples were collected with stainless steel spoons and homogenized in aluminum pans then transferred to the appropriate sample jars

The background samples, 011, 012, and 013, were taken approximately 2 5 miles northwest of the site or approximately 1 5 mile west of Bonne Terre, Missouri, on Airport Road (Figure 3) Sample 011 was taken approximately 250 feet west of Cabanne Course on the north side of Airport Road Sample 012 was taken approximately 1,000 feet east of Cabanne Course in a tributary that intersects Airport Road Sample 013 was taken approximately 0 5 miles east of Cabanne Course on Airport Road

On-site samples were taken at various locations on the tailings pile Sample 001 was taken on the southeast side of the site approximately 1,000 feet east of the landfill and 1,500 feet south of Big River Sample 002 was taken approximately 250 feet from Big River on the southeast side of the site where the river bends and flovs east Samples 003, 004, and 005 were taken at approximately 1,000 foot intervals across the north central area of the site Samples 006 and 007 were taken at approximately 2,000 foot intervals along the north perimeter of

the site Samples 008 and its duplicate 009D were taken on the east side of the site where the tailings slope steeply and enter the river via wind and water erosion Sample 010 was taken on the south east side of the site at Gap "E", which is a large eroded gully through which mine tailings are transported via water erosion to the river See Figures 2 and 3 for sample locations

ANALYTICAL RESULTS

Sample results were received on May 20, 1988 The soil samples were analyzed for total metals with lead (Pb), cadmium (Cd) and zinc (Zn), which are the heavy metals of primary concern Lead concentrations in the on-site samples ranged from 880 to 1,400 mg/kg Concentrations of Pb in the background samples ranged from 410 to 570 mg/kg Cadmium was detected at concentrations ranging from 8 4 to 19 mg/kg in the on-site samples No Cd was detected in the background samples Zinc was detected at concentrations ranging from 370 to 1,100 mg/kg in the on-site samples Concentrations of Zn ranged from 97 to 99 mg/kg in the background samples Table 1 summarizes sample results

SUMMARY AND CONCLUSIONS

On May 17, 1988 the E & E/FIT conducted a limited site investigation of the Big River Mine Tailings site in Desloge, Missouri The purpose of this investigation was to characterize the heavy metal content of the mine tailings

Twelve soil samples were taken nine on-site samples (with one duplicate) and three background samples Sample results were received on May 20, 1988 The Pb, Cd, and Zn concentrations in the on-site samples were significantly greater than the levels detected in background samples For further recommendations see the preliminary assessment prepared by E & E/FIT (May 1988) under TDD #F-07-8711-039

Attachments:
- Site Location Map
- Site Map (showing on-site sample locations)
- Site Map (showing background sample locations)
- Table 1
- EPA Site Inspection Form 2070-13
- Chain-of-Custody and Field Sheets
- Data Transmittal

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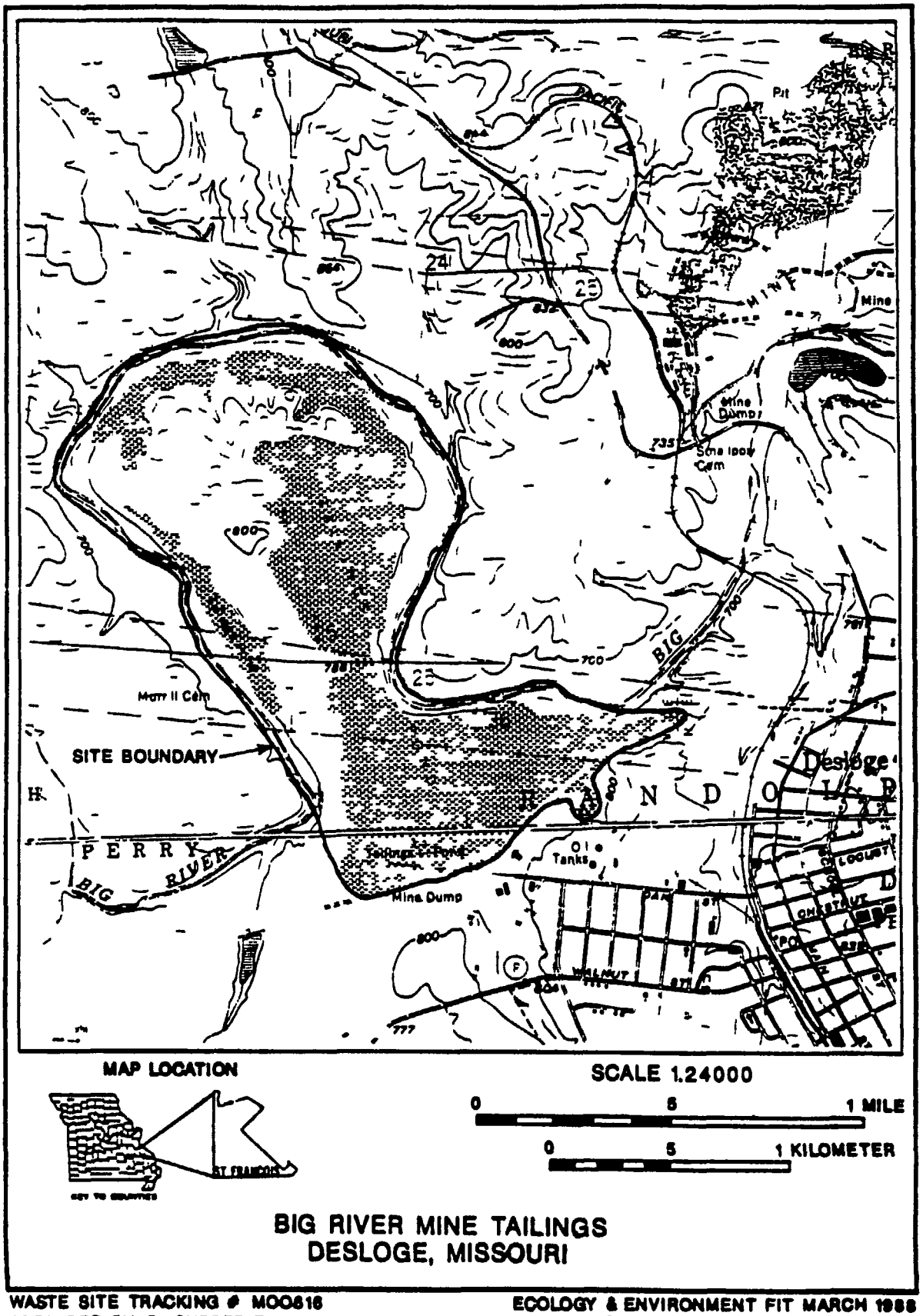
Table 1
Soil Sample Summary
Big River Mine Tailings Site
Desloge, Missouri
E & E/FIT, May 1986
Sample Series TK981

Sample #	Lead (Pb)	Cadmium (Cd)	Zinc (Zn)
001	1,200	15	830
002	1,300	17	1,000
003	1,100	12	680
004	880	16	900
005	1,000	19	1,100
006	1,300	16	810
007	970	8 4	370
008	1,200	11	610
009D	1,300	13	700
010	1,400	17	870
011*	410	ND	99
012*	560	ND	99
013*	570	ND	97

* Background
ND = Non detected

NOTE: Only detected levels are reported All concentration are reported in mg/kg See Figure 2 for sample locations and data transmittal for complete analytical results

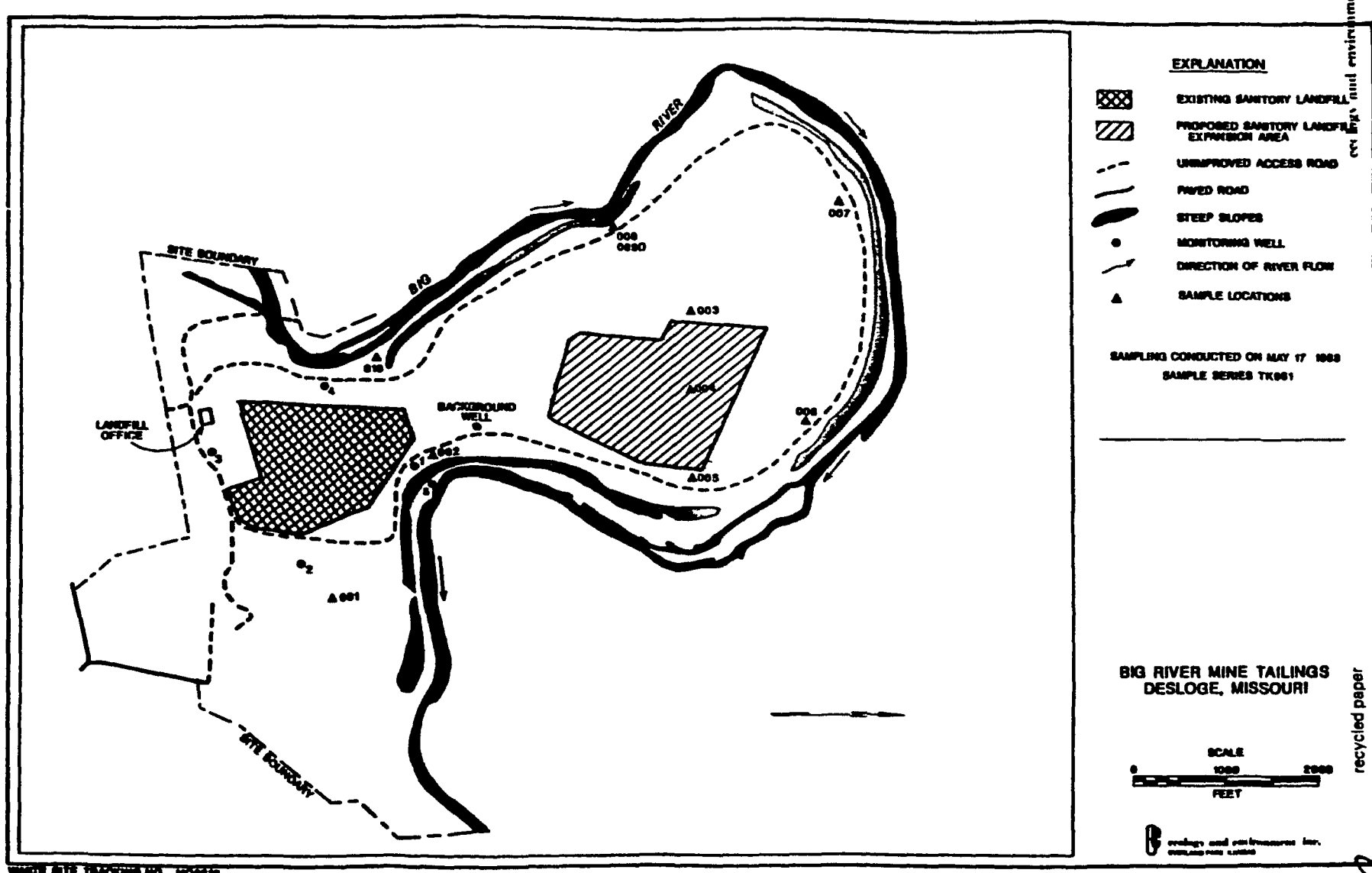


BIG RIVER MINE TAILINGS
DESLOGE, MISSOURI

WASTE SITE TRACKING # MO0616
PREPARED BY R OVERFELT

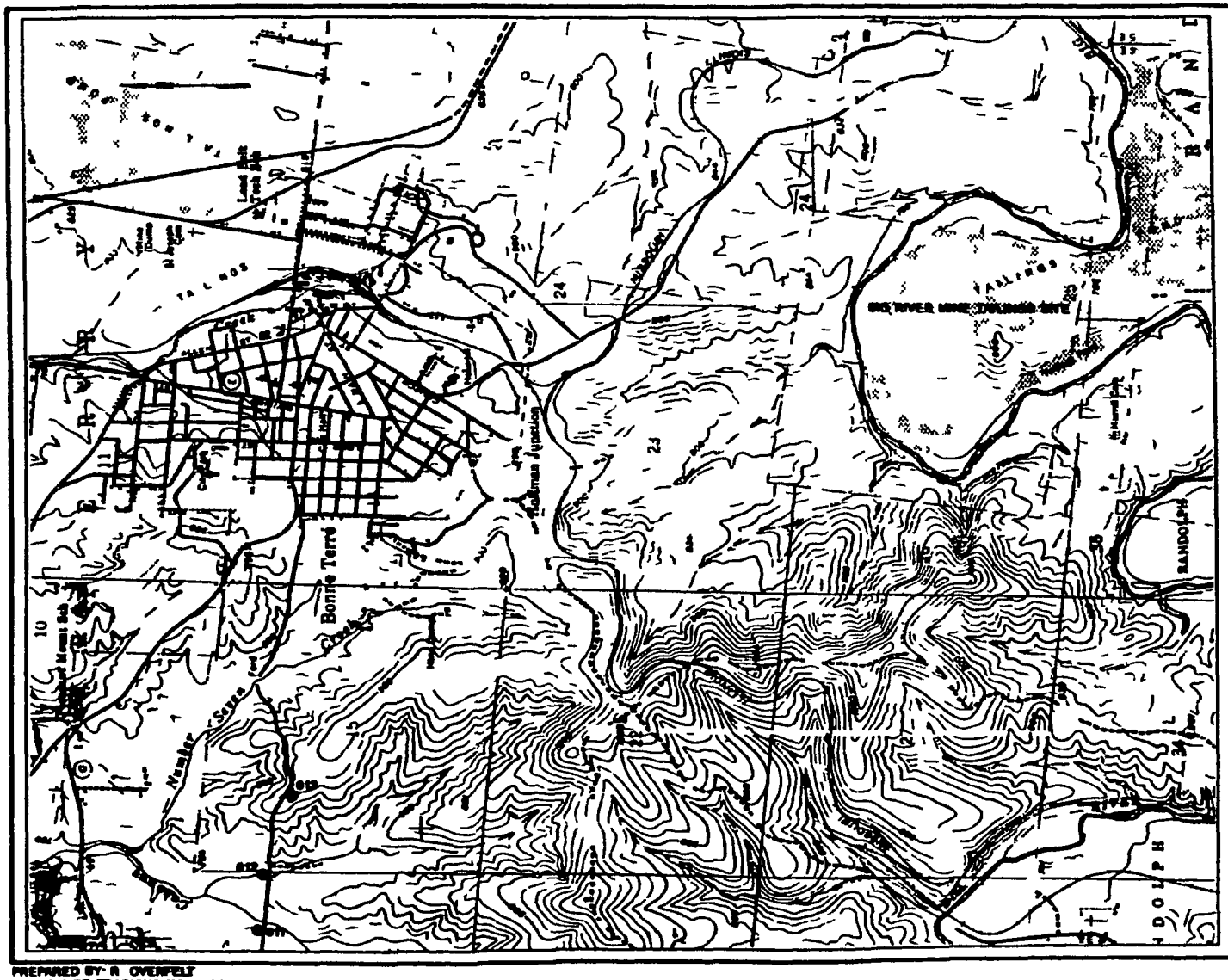
ECOLOGY & ENVIRONMENT FIT MARCH 1988
SOURCE USGS 7 5 BONNE TERRE
& FLAT RIVER MO QUADS 1982

FIGURE 1 SITE LOCATION



PREPARED BY: C. WILLIAMS

FIGURE 2: ON-SITE SAMPLE LOCATION MAP



EXPLANATION

● SAMPLE LOCATION

SAMPLING CONDUCTED ON MAY 17 1988

SAMPLE SERIES TK001

BIG RIVER MINE TAILINGS
DESLOGE, MISSOURI

SCALE 1:24000

0 0.5 1 MILE

0 0.5 1 KILOMETER

ecology and environment, inc

PREPARED BY: R. OVERFELT
WASTE SITE TRACKING NO.: MO0616

FIT JULY 1988
SOURCE: USGS 7.5' BONNE TERRE, MO QUAD 1964

FIGURE 2: BACKGROUND SAMPLE LOCATIONS

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
25 FUNSTON ROAD
KANSAS CITY KANSAS 66115

Date 5/20/88

MEMORANDUM

SUBJECT Data Transmittal for Activity # TK981,
Site Description Big River Mine Tailings

FROM Robert D Kleopfer, Ph D
Chief, Laboratory Branch, ENSV

TO Charles P Hensley
Chief, Emergency Planning and Response Branch, ENSV

ATTN P Doherty

Attached is the data transmittal for the above referenced site

This should be considered a ___ Partial or X Complete data transmittal

(completes transmittal of _____) If you have any questions

or comments, please contact Dee Simmons at 236-3881

Attachments

cc Data File

RECEIVED
MAY 20 1988
E&E KC.K.

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EPA Region VII

Data Qualification Codes

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit

M - Compound was qualitatively identified; however, quantitative value is less than contract required quantitation limits (CLP data); or value is less than limit of quantitation (EPA data) and is, therefore, an estimated value.

J - The associated numerical value is an estimated quantity

I - The data are invalid (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.

O - Sample lost or not analyzed.

L - Value known to be higher than value reported.

N - Presumptive evidence of presence of material.

NA - Sample was not analyzed for this compound.

NJ - Presumptive evidence of the presence of the material at an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

Codes for Flash Point Data

L - The sample did not ignite or "flash." This is the highest temperature at which the sample was tested. It is possible that the material may be ignitable at higher temperatures.

K - The sample did ignite or "flash" at the lowest temperature tested. This is usually the ambient temperature at the time of the test. It is possible that the material may be ignitable at even lower temperatures.

FIELD SHEET
ENVIRONMENTAL PROTECTION AGENCY REGION [illegible]

Site Name [illegible] Site Number
Location [illegible] Site Code

Collected [illegible] Mo 5 Dy 16 Time 1600 [illegible] B OVERALL

Sample Number [illegible]81001 SFO #

[illegible] SOIL SEDIMENT WATER OTHER

[illegible] YES (NO)

0-6 [illegible] 5

Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description Southeast
#1 See field Map

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FIELD SHEET
U S ENVIRONMENTAL PROTECTION AGENCY REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY KS 66115

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code:

Collected YR 88 MO 5 Day 16 Time 1610 Leader B OVERFELT

Sample Number TF98100 SMO #:

Sample Media (circle one):
(SOIL) DUST RINSATE SEDIMENT, WATER OTHER _____

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
8 OZ JAR	WHITE		TOTAL METALS

Depth 0-6" Pan # _____ Aliquots 5

Samplers Ted Faile

COMMENTS OF FIELD PERSONNEL

Site Description Southeast bend of Big River near monitoring well #2 see field Map

IBM-PC

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FIELD SHEET

U S ENVIRONMENTAL PROTECTION AGENCY REGION II
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY KS 66115

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code

Collected YR 88 MO 5 Day 16 Time 1620 Leader B OVERFELT

Sample Number TM98100 3 SMO #

Sample Media (circle one):
(SOIL) DUST, RINSATE, SEDIMENT WATER OTHER _____

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
8 OZ JAR	WHITE		TOTAL METALS

Depth 0-6 Pan # _____ Aliquots 5

Samplers Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description: See field Map
#500 #3

IBM-PC

FIELD SHEET
U S ENVIRONMENTAL PROTECTION AGENCY REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY KS 66115

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code:

Collected YR 88 MO: 5 Day 16 Time 1630 Leader B OVERFELT

Sample Number TM98100 4 SMO #:

Sample Media (circle one):
(SOIL) DUST, RINSATE, SEDIMENT WATER OTHER _____

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
8 Oz JAR	WHITE		TOTAL METALS

Depth 0-6" Pan # _____ Aliquots 5

Samplers Ted Faile

COMMENTS OF FIELD PERSONNEL

Site Description: #4 See field map

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14826

FIELD SHEET

U S ENVIRONMENTAL PROTECTION AGENCY REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY KS 66115

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code

Collected YR: 88 MO 5 Day 16 Time 1640 Leader B OVERFELT

Sample Number TI 981005 SMO #:

Sample Media (circle one)
(SOIL,) DUST, RINSATE, SEDIMENT WATER OTHER _____

Sample Split (circle one) YES NO

Sample Container	Tag Color	Preservative	Analysis Requested
8 OZ JAR	WHITE		TOTAL METALS

Depth 0-6 Pan # _____ Aliquots 5

Samplers Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description #5 See field Map

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15726

FIELD SHEET

U S ENVIRONMENTAL PROTECTION AGENCY REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY, KS 66115

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code:

Collected YR 88 MO 5 Day: 16 Time 1645 Leader B OVERFELT

Sample Number TI 98100 SMO #

Sample Media (circle one):
(SOIL) DUST, RINSATE SEDIMENT, WATER OTHER _____

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
8 OZ JAR	WHITE		TOTAL METALS

Depth 0-6 Pan #: _____ Aliquots 5

Samplers Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description: #6 See field map

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FIELD SHEET

U S ENVIRONMENTAL PROTECTION AGENCY REGION II
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY KS 66115 V

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code

Collected YR: 88 MO: 5 Day 16 Time 1650 Leader B OVERFELT

Sample Number TR981007 SMO #:

Sample Media (circle one)
(SOIL), DUST, RINSATE SEDIMENT, WATER OTHER _____

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
8 OZ JAR	WHITE		TOTAL METALS

Depth 0-6 Pan # _____ Aliquots 5

Samplers Ted Esile

COMMENTS OF FIELD PERSONNEL

Site Description: #7 See field Map

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17826

FIELD SHEET

U S ENVIRONMENTAL PROTECTION AGENCY REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY KS 66115

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code

Collected YR 88 MO 5 Day 16 Time 1655 Leader B OVERFELT

Sample Number TK98100 8 SMO #:

Sample Media (circle one):
(SOIL) DUST, RINSATE, SEDIMENT, WATER OTHER _____

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
8 OZ JAR	WHITE		TOTAL METALS

Depth 0-6 Pan # _____ Aliquots 5

Samplers: Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description: # 8 See field Map

IBM-PC

18826

FIELD SHEET

U S ENVIRONMENTAL PROTECTION AGENCY REGION II
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY KS 66115

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code

Collected YR 88 MO 06 Day 16 Time 1700 Leader B OVERFELT

Sample Number TK9810003D SMO #:

Sample Media (circle one):
(SOIL) DUST, RINSATE, SEDIMENT, WATER OTHER _____

Sample Split (circle one) YES NO

Sample Container	Tag Color	Preservative	Analysis Requested
8 OZ JAR	WHITE		TOTAL METALS

Depth 0-6" Pan #:_____ Aliquots 5

Samplers Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description #8 See field Map

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FIELD SHEET

U S ENVIRONMENTAL PROTECTION AGENCY REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY KS 66115

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code:

Collected YR 88 MO 5 Day 16 Time 1705 Leader: B OVERFELT

Sample Number TK981010 SMO #:

Sample Media (circle one)
(SOIL) DUST, RINSATE, SEDIMENT, WATER OTHER _____

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
8 OZ JAR	WHITE		TOTAL METALS

Depth 0-6" Pan #:_____ Aliquots 5

Samplers Ted Faile

COMMENTS OF FIELD PERSONNEL

Site Description: #9 See field Map

IBM-PC

20826

FIELD SHEET
U S ENVIRONMENTAL PROTECTION AGENCY REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY, KS 66115

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code:

Collected YR: 88 MO 5 Day: 16 Time: 1755 Leader: B OVERFELT

Sample Number TK981011 SMO #:

Sample Media (circle one)
(SOIL) DUST, RINSATE, SEDIMENT, WATER OTHER _____

Sample Split (circle one): YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
8 OZ JAR	WHITE		TOTAL METALS

Depth 0-6" Pan # _____ Aliquots 5

Samplers: Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description: Location #1 off site background

IBM-PC

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FIELD SHEET
U S ENVIRONMENTAL PROTECTION AGENCY REGION 'II
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD ANSAS CITY S 66115

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code:

Collected YR: 88 MO 5 Day 16 Time 1800 Leader B OVERFELT

Samole Number TI981012 SMO #:

Sample Media (circle one)
SOIL, DUST, RINSATE, (SEDIMENT) WATER OTHER _____

Sample Split (circle one): YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
8 OZ JAR	WHITE		TOTAL METALS

Depth 0-6" Pan # _____ Aliquots 5

Samplers: Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description: Location #2 off site Background

IBM-PC

22726

FIELD SHEET
U S ENVIRONMENTAL PROTECTION AGENCY REGION II
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY KS 66115

Site Name JIG RIVER MINE TAILINGS Site Number
Location HOUSTON MO Site Code

Collected YR 88 MO: 5 Day 16 Time 1805 Leader B OVERFELT

Sample Number TI 98101 SMO # '

Sample Media (circle one):
(SOIL) DUST RINSATE SEDIMENT WATER OTHER _____

Soil Split (circle one) YES (NO)

No of	Container	Tag Color	Preservative	Analysis Requested
3	8 oz JAR	WHITE		TOTAL METALS

Depth 0-6" Pan # _____ Aliquots 5

Samplers Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description Location # 3 off site
Background

IBM-PC

23726

ANALYSIS TYPE: TOTAL METALS

TITLE: BIG RIVER MINE
LAB: EPA REGION VII
SAMPLE PREP: Std ANALYST/ENTRY: GRS
MATRIX: SEDIMENT
METHOD: 2001877
REVIEWER: [illegible]
DATA FILE: GS1
UNITS: MG/KG
CASE:
DATE: 05/19/88

		TK981001	TK981002	TK981003	TK981004
SILVER	MG/KG	1.3	1.7	1.2	1.5
ALUMINUM	MG/KG	690.0	620.0	650.0	790.0
ARSENIC	MG/KG	10.0U	10.0U	10.0U	12.0U
BARIUM	MG/KG	2.3	1.9	2.1	2.5
BERYLLIUM	MG/KG	.71	.57	.62	.77
CADMIUM	MG/KG	15.0	17.0	12.0	16.0
COBALT	MG/KG	14.0	9.8	12.0	15.0
CHROMIUM	MG/KG	1.4	1.2	1.4	1.7
COPPER	MG/KG	64.0	35.0	47.0	56.0
IRON	MG/KG	35000.0	22000.0	31000.0	33000.0
MANGANESE	MG/KG	4100.0	3900.0	3900.0	4200.0
MOLYBDENUM	MG/KG	4.6	3.7	4.3	4.9
NICKEL	MG/KG	12.0	6.9	9.7	13.0
LEAD	MG/KG	1200.0	1300.0	1100.0	880.0
ANTIMONY	MG/KG	10.0U	1.0U	10.0U	12.0U
SELENIUM	MG/KG	100.0U	100.0U	100.0U	120.0U
TITANIUM	MG/KG	N/A	N/A	N/A	N/A
THALLIUM	MG/KG	530.0U	500.0U	500.0U	720.0U
VANADIUM	MG/KG	5.2	1.5	4.6	5.6
ZINC	MG/KG	830.0	1000.0	680.0	900.0
CALCIUM	MG/KG	200000.0	190000.0	200000.0	190000.0
MAGNESIUM	MG/KG	96000.0	97000.0	98000.0	96000.0
SODIUM	MG/KG	5800.0	5400.0	5500.0	6900.0
POTASSIUM	MG/KG	170.0	120.0	140.0	260.0

ANALYSIS TYPE: TOTAL METALS

TITLE: BIG RIVER MINE
LAB: EPA REGION VII
SAMPLE PREF: WRS ANALYST/ENTRY: GRS
MATRIX: SEDIMENT
METHOD: 2001S77
REVIEWER: WSB
DATA FILE: GS1
UNITS: MG/KG
CASE:
DATE: 05/19/88

		TK981005	TK981006	TK981007	TK981008
SILVER	MG/KG	1.7	1.4	.85	1.1
ALUMINUM	MG/KG	730.0	780.0	670.0	590.0
ARSENIC	MG/KG	10.0U	11.0U	10.0U	10.0U
BARIUM	MG/KG	2.2	2.4	2.0	1.8
BERYLLIUM	MG/KG	.70	.76	.70	.61
CADMIUM	MG/KG	19.0	16.0	8.4	11.0
COBALT	MG/KG	14.0	17.0	18.0	14.0
CHROMIUM	MG/KG	1.6	1.4	1.4	1.3
COPPER	MG/KG	70.0	100.0	87.0	64.0
IRON	MG/KG	32000.0	35000.0	33000.0	31000.0
MANGANESE	MG/KG	4000.0	4200.0	4000.0	3900.0
MOLYBDENUM	MG/KG	4.8	4.9	4.5	4.2
NICKEL	MG/KG	12.0	14.0	17.0	12.0
LEAD	MG/KG	1000.0	1300.0	970.0	1200.0
ANTIMONY	MG/KG	10.0U	11.0U	10.0U	10.0U
SELENIUM	MG/KG	100.0U	110.0U	100.0U	100.0U
TITANIUM	MG/KG	N/A	N/A	N/A	N/A
THALLIUM	MG/KG	610.0U	650.0U	550.0U	500.0U
VANADIUM	MG/KG	5.0	5.5	5.1	4.0
ZINC	MG/KG	1100.0	810.0	370.0	610.0
CALCIUM	MG/KG	200000.0	190000.0	180000.0	190000.0
MAGNESIUM	MG/KG	97000.0	92000.0	90000.0	92000.0
SODIUM	MG/KG	6400.0	6500.0	5900.0	5400.0
POTASSIUM	MG/KG	190.0	270.0	180.0	130.0

25726

ANALYSIS TYPE: TOTAL METALS

TITLE. BIG RIVER MINE
LAB: EPA REGION VII
SAMPLE PREP: 2NS ANALYST/ENTRY: GRS
MATRIX: SEDIMENT
METHOD: 2001S77
REVIEWER: 2NS
DATA FILE: GS1
UNITS: MG/KG
CASE:
DATE: 05/19/88

		TK981009D	TK981010	TK981011	TK981012
SILVER	MG/KG	1.2	1.5	.50U	.20U
ALUMINUM	MG/KG	620.0	670.0	9000.0	5100 0
ARSENIC	MG/KG	10.0U	10.0U	13.0U	10.0U
BARIUM	MG/KG	1.9	2.2	270.0	300.0
BERYLLIUM	MG/KG	.65	.71	.81	.52
CADMIUM	MG/KG	13.0	17.0	2.0U	10.0U
COBALT	MG/KG	15.0	16.0	15.0	18.0
CHROMIUM	MG/KG	1.3	1.4	10.0	11.0
COPPER	MG/KG	78.0	92.0	26.0	26.0
IRON	MG/KG	32000.0	35000.0	20000.0	24000.0
MANGANESE	MG/KG	3800.0	4100.0	1400.0	1500.0
MOLYBDENUM	MG/KG	4.4	4.6	6.9	4.7
NICKEL	MG/KG	13.0	14.0	21.0	18.0
LEAD	MG/KG	1300.0	1400.0	410.0	560.0
ANTIMONY	MG/KG	10.0U	10.0U	2.0U	1.0U
SELENIUM	MG/KG	100.0U	100.0U	20.0U	10.0U
TITANIUM	MG/KG	N/A	N/A	N/A	N/A
THALLIUM	MG/KG	500.0U	520.0U	100.0U	50.0U
VANADIUM	MG/KG	4.7	5.2	31.0	22.0
ZINC	MG/KG	700.0	870.0	99.0	99.0
CALCIUM	MG/KG	190000.0	190000.0	30000.0	45000.0
MAGNESIUM	MG/KG	92000.0	92000.0	16000.0	21000.0
SODIUM	MG/KG	5500.0	5800.0	2200.0	2600.0
POTASSIUM	MG/KG	140.0	140.0	1500.0	1100.0

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ANALYSIS TYPE: TOTAL METALS

TITLE: BIG RIVER MINE
LAB: EPA REGION VII
SAMPLE PREP: DRS ANALYST/ENTRY: GRS
MATRIX: SEDIMENT
METHOD: 2001S77
REVIEWER: DRS
DATA FILE: GS1
UNITS: MG/KG
CASE:
DATE: 05/19/88

		TK981013
SILVER	MG/KG	.50U
ALUMINUM	MG/KG	6600.0
ARSENIC	MG/KG	12.0U
BARIUM	MG/KG	140.0
BERYLLIUM	MG/KG	.42
CADMIUM	MG/KG	2.0U
COBALT	MG/KG	11.0
CHROMIUM	MG/KG	6.3
COPPER	MG/KG	29.0
IRON	MG/KG	15000.0
MANGANESE	MG/KG	1100.0
MOLYBDENUM	MG/KG	5.2
NICKEL	MG/KG	10.0
LEAD	MG/KG	570.0
ANTIMONY	MG/KG	2.0U
SELENIUM	MG/KG	20.0U
TITANIUM	MG/KG	N/A
THALLIUM	MG/KG	100.0U
VANADIUM	MG/KG	19.0
ZINC	MG/KG	97.0
CALCIUM	MG/KG	44000.0
MAGNESIUM	MG/KG	23000.0
SODIUM	MG/KG	2800.0
POTASSIUM	MG/KG	1200.0